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THE SOCIAL AND ENVIRONMENTAL EXPERIENCE OF DIABETES: IMPLICATIONS FOR DIABETES PREVENTION, MANAGEMENT AND TREATMENT PROGRAMS

A REPORT ON ETHNOGRAPHIC CASE STUDIES AND MAPPING IN SIX AFRICAN AMERICAN, LATINO, NATIVE AMERICAN, AND VIETNAMESE COMMUNITIES IN CALIFORNIA

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- The North Vallejo community and the Solano Coalition for Better Health; and
- The Healdsburg community and the Redwood Community Health Coalition, particularly the Alliance Medical Center.

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ETHNOGRAPHIC CASE STUDY SYNTHESIS

Introduction

The last decade has seen a dramatic rise in the rate of type 2 diabetes in the United States. A multitude of factors have contributed to this increase in prevalence of the disease. These same factors impact the ability to manage the disease in order to avoid complications and maintain an acceptable quality of life. These factors include:

- Physical environment: safe spaces for physical activity, access to healthy foods
- Social Environment: individual and community support for diabetes prevention and management behaviors
- Access to health care
- Quality of available health care
- Heredity

Among ethnic minorities in California, a rising rate of diabetes is one of several chronic conditions that illustrate overall inequities in health. Socio-economic status impacts a number of these factors resulting in the disproportionate effects of type 2 diabetes within low-income and ethnic-specific populations. Lack of access to health insurance and health care causes low-income and ethnic-specific populations to receive insufficient and inadequate care. In addition, care for some ethnic populations is often provided in a culturally insensitive manner.

For these reasons, the evaluation has attempted to portray the environmental, cultural and ethnic-specific factors that describe the experience of preventing and managing diabetes in low-income communities in California. Both environmental mapping and ethnographic case studies have been conducted in specific ethnic communities in California in order to explore the factors that support and inhibit diabetes prevention, management and treatment. The following provides a synthesis of the findings from the case studies and mapping reports. The complete case studies combined with the geographic maps provide an in-depth look at diabetes and the environment in seven African-American, Latino, Native American and Vietnamese communities across California, where The California Endowment has funded diabetes projects.

The California Endowment Diabetes Initiative

To reduce disparities in health and promote improvements in the health and well-being of California's underserved populations, The Endowment has funded the development and implementation of culturally appropriate programs to assist at-risk groups to better manage and prevent chronic diseases and conditions. Diabetes was identified as one of the health conditions for further program development and evaluation. To serve this purpose, The Endowment granted \$10 million to eight strategic diabetes demonstration projects serving 11 counties. The projects' goals are to reduce health disparities through education, treatment and management within African American, Latino, Native American, Filipino and Vietnamese communities. Grantees of this initiative include:

- Alameda County Public Health Department (Alameda County)
- Northwest Portland Area Indian Health Board (Statewide)
- Redwood Community Health Coalition (Sonoma, Napa, Marin and Yolo counties)

- Riverside-San Bernardino County Indian Health, Inc. (San Bernardino and Riverside counties)
- San Joaquin Community Hospital Corporation (Kern County)
- Solano Coalition for Better Health (Solano County)
- White Memorial Medical Center Charitable Foundation (Los Angeles County)
- Whittier Institute for Diabetes and Endocrinology (San Diego County)

Background

Diabetes rates have reached epidemic proportions in the United States. The Centers for Disease Control and Prevention estimate that 17 million people in the U.S., 6.2 percent of the population, have diabetes (CDC, 2003b). In the year 2000, diabetes was the 6th leading cause of death in the United States, responsible for 69,301 deaths (Anderson, 2002). In 2001, more than 1.4 million California adults had been diagnosed with diabetes (Diamant, et al., 2003).

The rising diabetes rates have been associated with increased obesity rates. From 1991 to 2001, there was a 74 percent increase in obesity among adults 18 years and older (Mokdad, et al., 2003). Physical activity and nutrition environments that promote unhealthy eating and sedentary lifestyles may contribute to the increase in overweight and obesity, and therefore may play a role in the increasing trend in diabetes.

California is experiencing the same trends as the nation, with a 67.4 percent increase in diabetes among adults 18 years and older from 1990 to 1998 (Mokdad, et al., 2000) and almost a doubling of the obesity rate from 1991 to 2001 (CDC, 2003a), resulting in 20.9 percent of California residents being obese (Mokdad, et al., 2003).

As demonstrated in the literature review for this evaluation, certain racial/ethnic groups are at increased risk for diabetes (Stone, et al., 2002). Unfortunately, the racial/ethnic groups that experience higher rates of diabetes also suffer from higher rates of inadequate health care, cultural barriers to care and increased severity of complications. Some of the populations most affected by diabetes are among the fastest growing segments of the U.S. population (Diabetes Research Working Group, 1999).

African-Americans

American Diabetes Association estimates that 2.8 million (13 percent), African Americans have diabetes and only two-thirds of them have been diagnosed. Once diagnosed with diabetes, African Americans fare worse in terms of some diabetes complications. African-American diabetics are twice as likely to suffer from diabetes-related blindness, 1.5 to 2.5 times more likely to suffer from lower-limb amputations and 2.6 to 5.6 times more likely to have kidney disease than diabetics of other races (ADA, 2003b). In California, 10.3 percent of all African Americans have been diagnosed with diabetes, 34.6 percent of who are overweight, and more than half of whom are obese (CHIS, 2001).

American Indians/Native Americans

Native American tribes experience the highest rates of diabetes, with the Pima Indians of Arizona showing a 50 percent prevalence rate (Black, 2002). Of those Native Americans who have been seen by Indian Health Services, 15 percent have been diagnosed with diabetes; the overwhelming majority of these cases are type 2 diabetes (NIDDK, 2002). There is variation by tribe, but on average American Indians and Alaska Natives are 2.6 times more likely to have diabetes than their white, non-Hispanic counterparts (NIDDK, 2002). In California, 9.3 percent

of Native Americans and Alaskan Natives have been diagnosed with diabetes (Diamant, et al., 2003). Native Americans and Alaskan Natives who have diabetes are more than twice as likely to be obese as their non-diabetic counterparts: 53.5 percent compared to 25.6 percent, respectively (CHIS, 2001).

Asian and Pacific Islander Americans

The category of "Asian and Pacific Islander American" encompasses many ethnic-specific groups, but diabetes statistics for this population are usually aggregated. There is considerable variance in culture and lifestyle between specific Asian and Pacific Islander ethnic groups; therefore, there is a limit to the interpretability and generalizability of the available information for this population. The prevalence of diabetes among Asians in California is 4.7 percent. Broken down into more specific ethnic groups, CHIS shows that 3.1 percent of Chinese identified Californians, 5.9 percent of Filipino identified Californians, and 4.8 percent of "other" specific Asian ethnic groups have diabetes. Rates among Asian ethnic groups show interesting variation by age: among adults aged 50 and older, Filipinos have a 17.1 percent prevalence rate and Southeast Asians have a 16.3 percent prevalence rate, both of which are significantly higher than the Chinese rate of 8.2 (Diamant, et al., 2003). Among Californians with diabetes identifying as Asian, 45.8 percent were of normal BMI, 37.4 percent were considered overweight, and 15.2 percent were obese.

Latinos

Nationally, over one in 10 (10.2 percent) Latinos have type 2 diabetes, which is double the prevalence in non-Hispanic whites (ADA, 2003a), though, similar to the Asian and Pacific Islander category, the category of Latinos encompasses many different cultures and regions, as well as different rates of diabetes. Type 2 diabetes is the third leading cause of death among Latinos of both sexes ages 55-74 (Anderson, 2001), and fifth leading cause of death across all ages, accounting for 5 percent of all deaths (Anderson, 2002). Of diabetic Latinos, 18.3 percent were of normal BMI, 36.0 percent were considered overweight, and 45.3 percent were obese. Sixty percent of Latinos who have been diagnosed with diabetes have incomes below 200 percent of the Federal Poverty Level, including 32.2 percent with incomes below 100 percent FPL (CHIS, 2001).

The data is clear that diabetes is more prevalent and causes more health complications among African Americans, Native Americans, and Latinos. Higher prevalence rates and higher complication rates are likely to be two factors that lead to greater diabetes mortality among these groups. The literature offers some explanation for the disparities in rates of diabetes and the associated complications.

Diabetes prevention, management and treatment literature shows that many African Americans, Latinos, Native Americans, and Asian and Pacific Islander Americans experience significant barriers to accessing health care providers, and participating in diabetes management programs and diabetes interventions (Brown, et al., 2002; Griffin, et al., 2000). A lack of transportation acts as a barrier for those needing to travel between home and their provider's office or an intervention site (Schoenberg and Drungle, 2001). Scarcity of resources limits access to diabetes self-care resources, such as glucose monitoring strips and the food necessary for maintaining good blood sugar control (Schoenberg and Drungle, 2001; Oomen, et al., 1999). As discovered in numerous studies, the presence or absence of cultural appropriateness and sensitivity in provider interactions (Schoenberg and Drungle, 2001), education materials (Brown and Hanis, 1999), and intervention components (Griffin, et al., 2000; Wang, et al., 1999) significantly impacts the success of improving health outcomes of people with diabetes. Whereas many

providers perceive the barriers to their patients' self-management as individual factors (Wang, et al., 1999), such as a lack of disease knowledge and lifestyle behaviors, many people with diabetes cite environmental barriers to their own disease management, such as insufficient appointment times, lack of transportation and a lack of culturally appropriate health care (Schoenberg and Drungle, 2001). This disconnect in the perception of where barriers lie is played out in the literature, as well: although growing, there is a limited amount of information pertaining to primary prevention, or the environmental factors associated with the disparities in diabetes rates and associated complications. The following four case studies shed some light on this gap in knowledge by highlighting the historical, regional and local context-specific factors that promote or hinder diabetes prevention, management and treatment.

Methods

Research Questions

Each case study aims to answer the following questions:

- 1) What are the ethnic-specific social and cultural traits that affect the prevention, treatment and management of diabetes among different ethnic groups (Latino, Vietnamese, African American, Native American)?
- 2) What cultural and social values does the service recipient community hold and how do these interact with service delivery?
- 3) What specific environmental stressors exacerbate the incidence of diabetes, as well as its prevention, treatment, and management?
- 4) Are prevention/intervention services culturally appropriate and community responsive to the population being targeted/served?
- 5) What are the vital community organizations and who are the cultural brokers within the population being targeted that serve as intermediaries, resources, translators and advocates for diabetes patients?

Methodologies and Data Sources

The main tools used for data collection were:

- 1) Site visits
- 2) Open-ended interviews with service delivery/project personnel
- 3) Open-ended interviews with recipients of project services, their families, and caregivers
- 4) Participant observation (in clinical, instructional and outreach settings, as well as among patients and in community settings)
- 5) Discussion groups/focus groups (with both providers and patient population)

Limitations

- These case studies speak only for those who were included in the surveys and interviews. These case studies are not able to produce conclusions for any particular ethnic group throughout the state, nor the nation. However, the ethnographers all had extensive prior experience in the communities in which they worked, allowing them an ease of access that enabled them to obtain honest, trustworthy information.
- None of the ethnographers were residents of the community in which they worked. Thus, the conclusions and perceptions of the community members may differ given the slightly different lens or paradigm through which the ethnographer and the community may see the world.

Key Findings

Each case study is rich with detail that informs the experience of diabetes in these communities. While each case study is unique and the experience of the individuals interviewed is unique, there are some themes that emerge across all the sites. A careful review of each case study provides an in-depth understanding of each community's experience around the prevention and management of diabetes. The following synthesis summarizes the key findings across all the case studies.

Poverty, immigration status, education level and racism interfere with the ability to access health care, advocate for quality care and manage the disease.

Across all the case studies, many of the patients and participants interviewed reported delaying diagnosis, medical care or treatment for extended periods of time. Limited financial resources, lack of health insurance or inadequate access to health care and insufficient information about the seriousness of the disease were all significant barriers to care and management. Multiple complications and related chronic conditions that emerged as a result of the lack of treatment served to interfere with everyday life. When patients finally received needed treatment, their conditions were far more severe and required far more attention than if they had been treated earlier. The severity of their patients' conditions requires these programs to focus much further downstream, precluding their ability to intervene much earlier to help individuals prevent the development of such severe and disabling conditions.

Ethnic-specific social, historical and cultural experiences affect the prevention, treatment and management of diabetes among the four different ethnic groups.

Each case study community exhibited their own specific ethnic and cultural experiences that affected diabetes. Across all sites it was clear that diabetes is a complex disease influenced by social, cultural, economic, historical, behavioral and environmental factors and it must be understood in the context of the community environment. The role of these factors was significant in how each population group experienced their disease and the services they needed to treat it and manage it. The following are some of the different historical, social and cultural experiences revealed in these case studies:

- The historical experiences of deportation in the Latino community, racism in the African American community and attempted genocide in the American Indian community has created an internal sense of distrust for the government and health and social services.
- Among all groups, social and cultural practices make it difficult to make the necessary dietary and lifestyle changes for management of diabetes. For example, some Vietnamese and Latinos interviewed felt uncomfortable with the idea of making or eating food that was different or separate from the rest of their family.
- Social events centered on food, such as barbeques (or *parilladas*) among the Latino community in Healdsburg and church related events among the African American community in North Vallejo, are an important aspect of family and community relations. Refraining from attending or hosting a social gathering such as this may be disruptive to the feeling of community, or may contribute to feelings of social isolation.

Cultural and social values influence interaction with the health care delivery system.

Social and cultural practices and historical experiences influence the preferences and satisfaction with the health care delivery system. Some significant differences exist across all four ethnic groups that make it difficult to generalize, but they each reflect the universal need to be responsive to community and cultural beliefs and practices when designing health care delivery programs for people with diabetes. For example:

- The Vietnamese respondents in San Diego would prefer to visit a Vietnamese provider, either a physician or a nurse, but not a community health worker.
- The Native American respondents placed a high degree of importance on seeing the same provider at each visit. This continuity and constancy of care built trust and effective communication.
- Among Latino respondents in Healdsburg and East Los Angeles, language barriers often resulted in a lack of quality of care. It was important for a provider to at least attempt to speak Spanish, if they couldn't fluently speak Spanish.
- Religious and other indigenous civic organizations in the African American community, provide an important link to the health care delivery system, because they address a broader range of solutions beyond the medical model.
- Language barriers for the Latino community and communication challenges for the Native American community result in a delay in diagnosis and many people receiving their initial diagnosis after being admitted to the hospital, rather than during an office visit or checkup.

Specific environmental stressors exacerbate the experience of diabetes, as well as its prevention, treatment and management.

The effects of poverty, acculturation and inequality have a dramatic effect on the ability to make changes in lifestyle and the options available in their community, particularly with regard to diet and physical activity. The environmental maps show that in most of these communities, the dearth of usable parks severely restricts the community's access to engage in physical activity for diabetes prevention or management. The abundance of fast food outlets and liquor stores increases access to unhealthy foods that are high in fat and simple carbohydrates, such as french fries, sodas and candy. Lack of access to parks appears to be most prominent in the areas of the lowest income. Conversely, fast food and liquor stores appear to be easily accessible from everywhere, and in some communities, especially in lower income areas. Specific examples include:

- Extreme poverty experienced by Latinos living in the Healdsburg area, makes it difficult to purchase food and prohibits the purchase of medication and diagnostic tools for monitoring and managing their diabetes.
- The presence of a casino on the Indian reservation conferred greater access to most resources—including healthy food—than when compared to other reservations without casinos. Similarly, the presence of the mobile van and other health services were more available in the presence of a casino, than on reservations without them.
- A lack of supermarkets in the North Vallejo and East Oakland African American neighborhoods severely limits residents' access to fresh fruits and vegetables.
- Lack of access to usable parks and recreation facilities in urban neighborhoods, like East Oakland, limited opportunities for residents to be physically active.

- Violence in neighborhoods, such as East Los Angeles, North Vallejo and East Oakland, contributes to residents' fear of walking down the street or visiting their local park. This fear is a serious and fundamental barrier to mobilizing people at-high risk for diabetes to engage in physical activity. This fear makes discussions of the simple presence of resources, such as parks and running trails, nearly obsolete, as people are faced with more immediate matters in struggling to survive.
- Across all sites, long work hours limited time available for food preparation and physical activity.
- Poor dietary patterns were especially apparent among new immigrants acculturating to a
 new country. Among Vietnamese, increased consumption of non-traditional foods high in
 saturated fat was a result of increased access and availability of meat products and a value
 placed on meat as being more nutritious than fruits and vegetable. The Vietnamese are
 consuming more meat and fewer vegetables than in their native country.
- The Vietnamese are also experiencing a decrease in physical activity as compared to the amount of walking and type of chores that added to the accumulated physical activity in Vietnam.

Prevention/intervention services need to be culturally appropriate and community responsive to the populations being served.

The diabetes prevention/intervention programs are attempting to fill a large need that cannot be filled by one project, by providing culturally appropriate and community responsive care. Some important models are emerging from this experience that needs wider dissemination. For example:

- Alameda County Health Department and the Solano Coalition for Better Health are capitalizing on the existing community structures, organizations and institutions that have had experience combating difficult problems in those communities before.
- By charging a flat reasonable fee and not requiring any paperwork, the Alliance Health
 Center in Sonoma County is able to attract many Latinos who cannot afford insurance and
 are adverse toward paperwork due to illiteracy or fear of being deported. Furthermore,
 extended hours at the Alliance Health Center enable farmworkers and others to attend the
 clinic after work.
- White Memorial Medical Center in East Los Angeles is helping patients cope with depression and social isolation by building on existing cultural and community traditions such as Promotoras, educational classes and support groups.

Some challenges are also emerging from the experience. For example:

- Without well-connected staff that are internal to the tribe attempting to draw people into the clinics, few American Indian people in the Morongo and Torres-Martinez Indian Reservations in Riverside County will attend the mobile clinic.
- Project Dulce in San Diego would benefit from recruiting or conducting outreach to Vietnamese providers, and increasing the amount of education and materials available in the Vietnamese language. Without providers that understand the Vietnamese context, with respect to traditional medicines and how Western bio-medicine interacts with the longstanding beliefs, true access to the community will be limited. Project Dulce may also benefit from increased Vietnamese attendance if free transportation and childcare were offered along with free health services.

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Community organizations and cultural brokers play an important role as intermediaries, resources, translators and advocates for diabetes patients.

The case studies and mapping identified important community resources that need to be involved in helping residents prevent or manage diabetes. Without their involvement, many of these projects would not be reaching the audience in most need of services. For example:

- Among the City Heights Vietnamese community in San Diego, the Vietnamese physicians seem well-situated and connected with the general community residents.
- In Oakland, 100 Black Men of the East Bay, Acts Full Gospel Church and the East Oakland Faith Deliverance Center have all assumed key roles on the East Oakland Diabetes Workgroup, and appear to be well-connected with the local community.
- Vallejo's Solano County Coalition for Better Health, the lay health advocates they train and the Senior Nutrition Program are appropriate cultural brokers, bringing community members together and strengthening community networks through diabetes education and support.
- In Healdsburg, the Alliance Health Center appears to be the primary place for support, education, resources and advocacy for diabetes patients. The Sonoma County Grape Growers Association (SCGGA) also appears to be well-situated to influence policy changes in favor of improving the environmental conditions for the farm workers; however, their realm of action seems limited to aspects of farm working life, such as housing and food.
- On the Morongo Indian Reservation, the Casino Morongo appears to be the most influential institution; however, with proper staffing by local well-respected and connected Native peoples, more of the intended audience may be drawn into the mobile clinics.

The maps combined with the case studies provide a visual representation of how environments in underserved communities of color are contributing to the epidemic of diabetes. What follows is a series of 12 maps - two for each of six communities: East Oakland in Alameda County; Boyle Heights in East Los Angeles, the Morongo Indian Reservation in Riverside County, City Heights in the City of San Diego, North Vallejo in Solano County, and Healdsburg in Sonoma County. Each set of two maps is preceded by an explanation, highlighting the key findings with respect to access to physical activity and unhealthy foods within each community.

11

MAPPING ENVIRONMENTAL FACTORS RELATED TO DIABETES IN SIX ETHNIC-SPECIFIC COMMUNITIES

Introduction

Studies have shown that poor communities and those of color experience increased difficulty in accessing fresh fruits and vegetables (Morland, 2002b), and safe spaces to be active and play (MMWR, 1999). Not surprisingly, these are also the neighborhoods where some of the highest rates of diabetes exist. Simultaneously, "unhealthy" factors such as fast-food restaurants and liquor/convenience stores exist in greater abundance in poor communities and those of color than in affluent and White communities (Reidpath, 2002; Morland, 2002b). To explore the reality of these conditions in the grantees' communities we mapped six of the communities in which ethnographic case studies were conducted.

Mapping Methods

Through a process of communication with grantees and ethnographers, Internet searches for publicly available data and GIS mapping using ESRI's (Environmental Systems Research Institute) ArcView software (ArcView, 2001), maps were developed for six ethnic specific communities. Publicly available data for local factors that contribute to or hinder diabetes prevention, management and treatment were obtained, geographically coded (geocoded) and overlaid on 1999 median family income. The factors were chosen based on: relevance to diabetes prevention, management, and treatment; quality of data or the degree to which the data correctly represented the local situation; and the degree to which the data could be standardized across sites, to maximize comparability among sites. The locations of the chosen factors, including fast food outlets, parks and recreation centers, liquor/convenience stores, farmers' markets, community gardens, major health and social centers, and—where possible—the grantee, were collected and mapped in relation to each other. Resource data was obtained through the following sources:

TYPE OF DATA	SOURCE OF DATA
Boundary	2000 US Census
	http://factfinder.census.gov
Demographic	2000 US Census
	http://factfinder.census.gov
Resource/Location	Varies by resource:
Liquor/Convenience Stores	Yellowpages.com
	<u>www.yellowpages.com</u>
Fast-food Outlets	Yellowpages.com
	www.yellowpages.com
	Superpages.com
	<u>yellowpages.superpages.com</u>

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¹ In some cases, the grantee offered services in a region other than where the target population was located, or where their physical address was located.

Farmers' Markets	USDA The National Directory of Farmers Markets http://www.ams.usda.gov/farmersmarkets
Community Gardens	Varies by site
Major Medical Resources	Information obtained from grantees
Parks & Recreation Centers	2000 US Census http://factfinder.census.gov Index of mining data by county http://www.calsign.com/mining/countydata Local municipal Parks & Recreation websites

In sum, resource data available through the 2000 U.S. Census Web site, several government web sites, two online Yellow Pages search engines, a mining resources Web site, and at the grantees recommendations were applied to geo-political boundaries to create maps that depict the interplay between the built environment and the people inhabiting these six communities.

Studies have shown an association between the location and use of resources, indicating that if grocery stores are available and nearby, one will frequent them; the case is similar with fast-food outlets (Morland, 2002a). Market and sales data indicate that people will frequent resources in their neighborhood more often the closer they are (Handy, 2003); that is, in urban neighborhoods, residents will visit resources in their neighborhood three times per week if they are within a five minute walk, and once per week if they are within a 10 minute walk (Business Districts, Inc. and Teska Associates, 2000). We calculated that a 5-minute walk and 10-minute walk were equivalent to a quarter-mile and a half-mile, respectively (Federal Highway Administration, 2000). Therefore we placed a quarter-mile and half-mile buffer around parks and recreation centers on each map of six communities one map, and fast food and liquor/convenience stores on another map. We chose to highlight parks and recreation centers for their access to free physical activity opportunities. We chose to highlight fast food and liquor/convenience stores for their access to low nutrient high calorie foods such as hamburgers, french fries, sodas, candy, chips, etc. We also mapped other factors in the community that are relevant to diabetes prevention, management and treatment: community gardens, farmers' markets, and the top community health and social services. Where possible we also mapped the grantee's location.

The objective of the following 12 maps, and accompanying explanations, is to assess the physical or external characteristics that affect diabetes prevention, management and treatment in six ethnic specific communities funded by The California Endowment. The goal of the analysis is to highlight the elements of the built environment that are either supporting or hindering community residents in leading a lifestyle conducive to preventing or managing diabetes.

ALAMEDA COUNTY: EAST OAKLAND

East Oakland is a densely populated urban area of Oakland in which the predominant population is African American; however, especially in the western region, Latinos comprise a significant percentage, as well. East Oakland sits at the base of the Oakland Hills and just north of San Leandro: both of which are higher income areas with comparatively lower population densities where the population is predominantly Caucasian. Additionally, the Oakland Hills include considerably more open space than East Oakland. Northwest and southeast of East Oakland lies densely populated urban areas; to the southwest lies industrial and commercial land (The Regents of the University of California, 1998). In 1999, the median family income of Alameda County was \$65,857; whereas the 1999 median family income for East Oakland was \$35,105 (US Census, 2000).

Map 1. 1999 Median Family Income by Census Tract with Buffer Around Parks & Recreation Centers

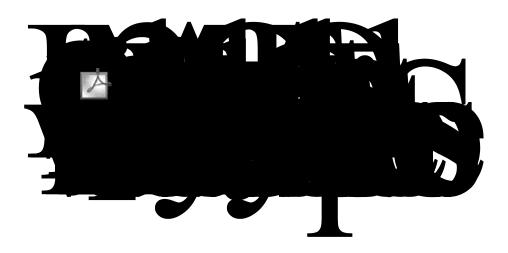
- Although dotted throughout, the majority of the parks and recreation centers are located in the southern part of East Oakland. The distribution of parks and recreation centers is fairly sparse throughout the central part of East Oakland.
- The majority of East Oakland is covered by the half-mile buffer indicating that the majority of the areas in East Oakland are farther than a quarter mile, although not farther than a half mile, from a park or recreation center.
- The majority of recreational space in most of East Oakland, especially the central region of East Oakland is comprised of mini-parks and recreation centers, not by large open space areas
- The lack of open space in the central area of East Oakland suggests that the opportunities
 for engaging in free physical activity are few, especially for the majority of the East
 Oakland residents.

Map 2. 1999 Median Family Income by Census Tract with Buffer Around Fast-food and Liquor Stores

- Nearly every house in the area designated as East Oakland is within at most a half mile of a fast-food outlet or a liquor/convenience store. Most houses are within less than a half mile.
- All half-mile circles on the map overlap, thus nearly every house is less than a 10-minute walk from multiple fast-food outlets and/or liquor/convenience stores.
- The quarter mile buffer around fast food outlets and liquor/convenience stores is contiguous for most of the East Oakland region, indicating that the fast food outlets and liquor/convenience stores are clustered along some of the streets. However, many of these streets are within a half mile of another street lined with fast food and liquor/convenience stores. Thus, not only is the community inundated with fast food and/or liquor convenience stores in their own neighborhood, but also in all nearby neighborhoods.
- The region of East Oakland where African Americans comprise nearly the entire population is heavily covered with contiguous quarter-mile buffers to fast food and liquor/convenience stores, indicating that most of the residents of this area are within less than a 5-minute walk from many fast food outlets and/or liquor/convenience stores.

Insert: Map 1. Alameda County: East Oakland 1999 Median Family Income by Census Tract with Buffer Around Parks & Recreation Centers





LOS ANGELES COUNTY: BOYLE HEIGHTS, EAST LA

Boyle Heights is a densely populated area of East Los Angeles where the majority population is Latino. The greater part of Boyle Heights is zoned for multiple residential family units; however, along North Soto Street, and particularly along E Cesar E Chavez Ave, the streets are lined with medium and heavy commercial use (City of Los Angeles, 1998). The percent of people in each census tract living below the 1999 federal poverty level ranges from a minimum of 19 percent to over 45.6 percent. The 1999 median family income in Los Angeles County was \$46,452; whereas, the 1999 median family income in the mapped area of Boyle Heights was \$25,568.

Map 3. 1999 Median Family Income by Census Tract with Buffer around Parks & Recreation Centers

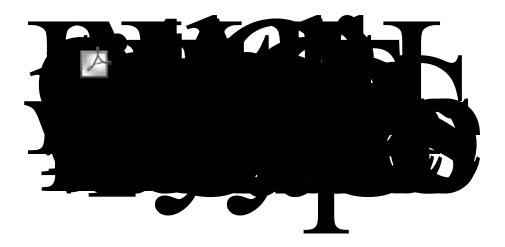
- Most houses in the 90033 zip-code area are within a half mile or less from a park or recreation center. Some blocks, especially those in the north-eastern section of this zip code, are within a quarter-mile or less from multiple parks and/or recreation centers.
- While two of the recreation areas in Boyle Heights consist of a playground and a recreation center, the remaining 7 to 8 areas are neighborhood parks (City of Los Angeles, 1998).
- People living at the intersection of North Soto Street and Brooklyn Avenue are over one half mile from a park.
- All of the parks and recreation centers in the 90033 zip-code area are within a half-mile from a fast-food outlet or liquor/convenience store, and most are within a quarter of a mile.

Map 4. 1999 Median Family Income by Census Tract with Buffer around Fast-food and Liquor Stores

- Nearly every section of this zip-code area is within a half mile from a fast-food outlet and/or a liquor/convenience store. People living in a small area in the northwest section, where the median family income is the highest, are more than a half-mile from a fast-food outlet and/or a liquor/convenience store.
- Throughout most of the zip code, the circles indicating a quarter-mile distance from a fast food outlet or liquor/convenience store are considerably overlapping. Thus nearly every household is within a 5-minute walk of multiple fast-food outlets and/or liquor stores.
- Half of the fast food and/or liquor/convenience stores are located within a quarter mile of a park, playground, or recreation center; and all 18 lie within at least a half mile.
- The area around North Soto Street and Brooklyn Avenue that is farthest from a park is also the area with the highest concentration of fast-food outlets, suggesting that people living in this area have easy access to low-nutrient, high calorie foods, but little access to free physical activity opportunities.

Insert: Map 3. Los Angeles County: Boyle Heights 1999 Median Family Income by Census Tract with Buffer Around Parks & Recreation Centers





RIVERSIDE COUNTY: THE MORONGO INDIAN RESERVATION

The Morongo Indian Reservation is the largest area among the six mapped communities. However, it is also the least densely populated, and therefore, home to a considerable amount of open space. A sparse network of roads connects the checkerboard reservation areas to each other and to the larger interior section. The nearby communities of Banning and Cabazon offer the largest source of retail options. The one casino on the reservation is a regular source of employment and food for the reservation residents. The census tract of which Morongo Indian Reservation is a part shows a 1999 median family income between roughly \$22,000 and \$30,000, compared to \$48,409 for Riverside County.

Map 5. 1999 Median Family Income by Census Tract with Buffer around Parks & Recreation Centers

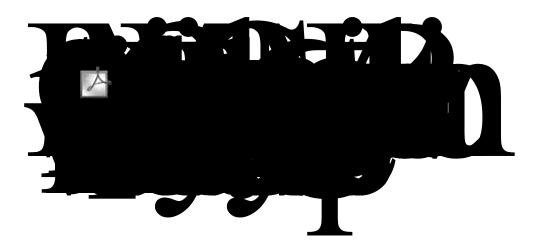
- There are no parks in the Morongo reservation; however, there is one park in the nearby town of Cabazon, several small parks in and around the town of Banning and several large parks in the nearby town of Cherry Valley.
- The sparse road network indicates the abundance of open space on this reservation.
- Using access to parks, measured by distance to parks, as a measure of physical activity opportunities is not appropriate for the case of this Indian reservation. On the Morongo Reservation, there is considerable open space, as indicated by the low road density. However, as indicated in the American Indian case study, the open space is not generally used for physical activity by the reservation residents. This suggests that a more culturally appropriate measure should be derived to address appropriate physical activity opportunities on a reservation.

Map 6. 1999 Median Family Income by Census Tract with Buffer around Fast-food and Liquor Stores

- There are no fast-food restaurants or liquor/convenience stores on the Morongo Indian Reservation.
- Six fast-food outlets and four liquor/convenience stores line Ramsey Street, the main avenue in Banning. Thus, access to fast-food outlets and liquor/convenience stores is substantial when the reservation residents are in Banning.
- The lack of fast-food outlets and liquor/convenience stores on the reservation does not have the same implications for this site, as it would for the other sites. With a dearth of all resources on the reservation, many of the Indian reservation residents must travel to either to Banning for food and other resources, or to the casino, where—according to the ethnographic case study the nutritional quality of food offered is low.

Insert: Map 5. Riverside County: Morongo Indian Reservation 1999 Median Family Income by Census Tract with Buffer Around Parks & Recreation Centers





SAN DIEGO COUNTY: CITY HEIGHTS

City Heights, located in the metropolitan city of San Diego, is a primarily a mixed use community with single and multiple family residences mixed with some neighborhood commercial and retail. The major veins, such as University Avenue, Cajon Boulevard and Fairmount Avenue are lined with commercial and retail establishments. The area around the intersection of University and Fairmount, as well as to the northeast of this intersection, is the most populated with up to 40 to 50 thousand people per square mile. The highest concentration of Asian and Pacific Islanders lives in and around this intersection; however, the majority population in the mapped area of City Heights is Latino. To the north, east and west, higher income areas are populated predominantly by Caucasians. In the mapped area of City Heights, the 1999 median family income was \$37,936, compared to \$53,438 for San Diego County. Additionally, the median family income ranges widely in this part of San Diego with a minimum of \$17,831 and a maximum of \$103,270. Most census tracts around the intersection of University Ave and Fairmount Ave fall into the lowest income bracket (\$17,831-\$23,258); this is also where the Asian & Pacific Islander population is highest.

Map 7. 1999 Median Family Income by Census Tract with Buffer around Parks & Recreation Centers

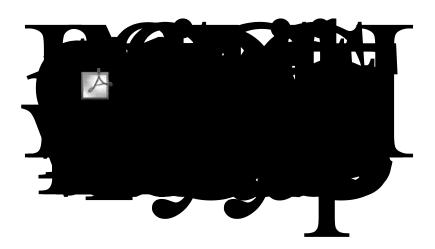
- The neighborhood around the intersection of University Avenue and Fairmount Avenue is dotted with parks; however, the density of parks is such that many community members live more than a half-mile from a park. Most of the residents here are at least a 10-minute walk from a park.
- The parks located in or near areas of a lower median family income are small community parks and recreation centers. The large open space parks some with accompanying recreation centers tend to be located in the higher income areas and where the Asian and Pacific Islander population is the lowest.
- Large areas of the City Heights map are untouched by a buffer because the few parks that exist in this community are fairly spread out. While it is beneficial to distribute parks evenly as opposed to clustering them the lack of a sufficient number of parks is visually demonstrated by the wide spaces between the buffers around the parks. Thus, while some access exists in some of the lower income areas, many people living in this community are without access to a park or recreation center.

Map 8. 1999 Median Family Income by Census Tract with Buffer around Fast-food & Liquor Stores

- The half-and quarter-mile buffers around fast food and liquor/convenience stores are significantly overlapping in the neighborhood around University Avenue and Fairmount Avenue. This overlapping nature of the buffers suggests that community residents living in this area have considerable access to fast-food and liquor/convenience stores.
- The density of fast-food restaurants is greatest in the areas of the lowest median family income. The quarter-mile buffers are considerably overlapping and contiguous throughout the lowest income areas indicating that residents are within less than a 5-minute walk from many fast food outlets and/or liquor convenience stores.

Insert: Map 7. San Diego County: City Heights 1999 Median Family Income by Census Tract with Buffer Around Parks & Recreation Centers





SOLANO COUNTY: NORTH VALLEJO

This area of Vallejo is very ethnically diverse. African Americans comprise the majority of the population in the three census tracts in which the Solano Coalition for Better Health is focusing: Lofas, College Park and Country Club Crest. However, to the east and west, Asians and Pacific Islanders comprise the majority population, and to the south Whites comprise the majority population. Although this area is fairly populated with single residential homes, it is primarily a suburban area with a few commercial zones along the major transportation veins. This area is bordered by Napa County to the north, and sandwiched between a state highway (29) and an interstate freeway (80), to the west and east, respectively. The 1999 median family income was \$59,367, similar to the 1999 median family income of \$60,597 for Solano County, of which Vallejo is a part.

Map 9. 1999 Median Family Income by Census Tract with Buffer around Parks & Recreation Centers

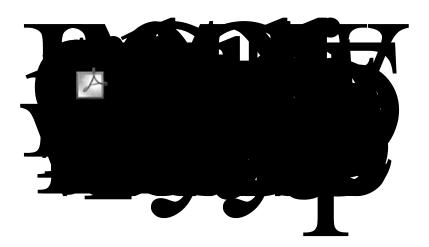
- The parks in North Vallejo are fairly spread apart; however, there are few bocks that are more than a half-mile from a park. The census tracts of Lofas, College Park and Country Club Crest all have at least one park.
- A large park in Lofas offers a considerable amount of open space along a lake.
- In the larger area of North Vallejo, the census tract with the lowest 1999 median family income is the only census tract without a park; however, areas of that census tract are within a half mile of parks in an adjacent census tract.
- From these maps, the residents of North Vallejo appear to have ample access to parks and recreation centers.

Map 10. 1999 Median Family Income by Census Tract with Buffer around Fast-food & Liquor Stores

- The fast food outlets and liquor/convenience stores are concentrated along the major highways and thoroughfares, such as Broadway Street and Sonoma Blvd./ Highway 29.
- The major areas of Lofas and Country Club Crest are farther than a half-mile from any fast food outlets and liquor stores.
- From this map, it appears that access to fast food and liquor stores is not abundant within walking distance. However, considering that the average household has 1.9 cars available, this may not be indicative of the true degree of access to fast food and liquor/convenience stores, as people may drive to access most resources instead of walk. If this is the case, then residents would encounter fast food and liquor stores nearly every time they drove.

Insert: Map 9. Solano County: North Vallejo 1999 Median Family Income by Census Tract with Buffer Around Parks & Recreation Centers





SONOMA COUNTY: HEALDSBURG

In this rural area, Latinos are not the majority population. However, in some census tracts they comprise 33 percent to 53 percent of the total population. Healdsburg is northwest of Santa Rosa nestled among acres of vineyards and other agricultural products. The median family income of this region is \$61,063, similar to \$61,921 the 1999 median family income for Sonoma County. However, this median family income is likely not reflective of the Latino community, as the areas with the highest proportion of Latino residents correlates with the census tracts with the lowest 1999 median family income in the range of \$45,000 to \$50,000.

Map 11. 1999 Median Family Income by Census Tract with Buffer around Parks & Recreation Centers

- As shown in the maps depicting access to parks, there are several parks in the Healdsburg area. Additionally, Healdsburg is located in a valley of vineyards, suggesting that there is considerable open space for engaging in physical activity.
- The parks are located in the areas with greater median family income, suggesting that the poorer communities have less access to parks and recreation.

Map 12. 1999 Median Family Income by Census Tract with Buffer around Fast-food & Liquor Stores

- Fast food outlets and liquor/convenience stores are concentrated in downtown Healdsburg with none found outside of the city limits. However, parts of the small area of downtown are within a quarter mile from three of these establishments.
- The area of Healdsburg is less populated than many of the other mapped sites. However, as indicated in the case study of the Latino population in the Healdsburg area, many Latinos wait in the downtown area for work. As shown in the map depicting access to fast food outlets and liquor/convenience stores, there are numerous fast food outlets and liquor/convenience stores in downtown Healdsburg, suggesting that many of those the Alliance Health Center is targeting have access to these places as they search for employment.
- The fast food outlets and/or liquor stores are located in the areas with the lowest median family income, suggesting that low-income residents have more access to these businesses, and thus to unhealthy food.

Insert: Map 11. Sonoma County: Healdsburg 1999 Median Family Income by Census Tract with Buffer Around Parks & Recreation Centers





RECOMMENDATIONS

The findings from the case studies and mapping yield specific and concrete recommendations for each ethnic community. By combining the case studies and the maps, we have a much more indepth understanding of the experience of diabetes in these underserved communities. The learnings from the social and environmental context provide important implications for diabetes prevention, management and treatment programs.

- Programs need to intervene at a much earlier stage to enable earlier diagnosis and treatment of diabetes before significant and severe symptoms emerge. Identifying populations at high risk and helping them adopt healthier lifestyles - through both behavioral and environmental change - is imperative to preventing serious complications and co-morbid conditions from contributing to health disparities.
- Programs need to be tailored and responsive to the ethnic-specific and community-specific needs and experiences of each ethnic group or community. Patient-centered care needs to be a focus of the provider-patient interactions. Thus, providers must receive the education necessary to be attentive to the historical, cultural, social and economic context of their patients. Although speaking the same language as a provider is helpful, it is not mandatory for patients to experience good care.
- Community strategies need to help inform the public, organizations and institutions about community-wide factors that are contributing to diabetes to increase awareness of what needs to be changed, and how to approach changing such factors.
- Services need to be continuous and consistent. To truly gain the trust and understand the context of the community, service efforts must be part of a long-term commitment.
- More focused attention on, and allocation of resources to, self-care and management is necessary. Once provided with appropriate education, people with diabetes are ready to manage their own disease; however, the dearth of resources to do so makes it nearly impossible.
- Given this complex social, cultural and environmental context, it appears that most of the focus in these communities is on individually-based care. Few of the projects are linking the high rates of diabetes with the social, economic and environmental reality reflected in these communities. More attention needs to be placed on changing the environment in these communities to increase the availability of healthy food, transportation, recreation and parks for physical activity, and other resources critical for the care and management of diabetes

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